EOS Production Sites
Network Performance Report

This is a monthly summary of EOS network performance testing between production sites for December 2005 -- comparing the measured performance against the requirements.

Highlights:

- Mostly stable performance

- Most GSFC-JPL flows moved from EMSnet to NISN PIP on 2 December
    - Including JAXA tail circuit
    - Excluding ASF tail circuit, JPL-SEAPAC node
    - Flow and MRTG data are no longer available on these NISN paths

- This report now incorporates GSFC-SAFS to LaRC-SAGE III MOC
    - (was in SCF report)
- Added new tests from DAACs to GSFC-ECHO

- Outstanding Issues:
    - GSFC to JPL-AIRS via PIP
    - This report delayed due to attempt to incorporate new requirements
        - Unsuccessful! Old requirements used this time. Maybe next month!

- Significant changes in testing are indicated in Blue, Problems in Red

Ratings:

Rating Categories:

Rating	Value	Criteria
Excellent:	**4**	**Total Kbps** > Requirement * 3
Good:	**3**	1.3 * Requirement <= **Total Kbps** < Requirement * 3
Adequate:	**2**	:Requirement < **Total Kbps** < Requirement * 1.3
Almost Adequate:	**1.5**	Requirement / 1.3 < **Total Kbps** < Requirement
Low:	**1**	Requirement / 3 < **Total Kbps** < Requirement / 1.3
Bad:	**0**	**Total Kbps** < Requirement / 3

Where Total Kbps = Integrated Kbps (where available)
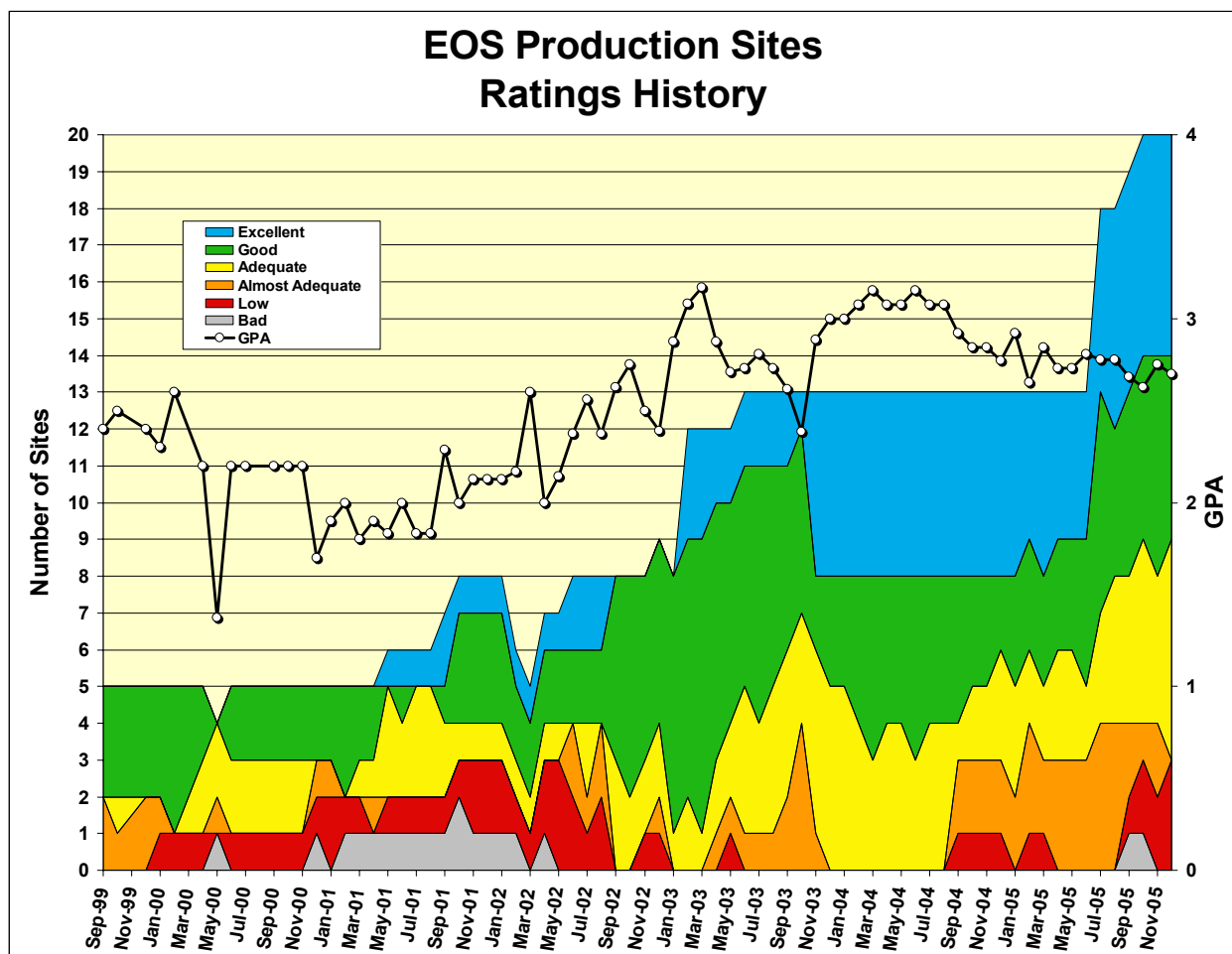Else = User Flow + iperf monthly average

Ratings Changes:

Upgrades: ↑
      JPL → LaRC: Almost Adequate → **Adequate**

Downgrades: ↓
      US → JAXA: Almost Adequate → **Low**
      JAXA → US: Good → **Adequate**

EOS Production Sites
Ratings History

Legend:
- Excellent
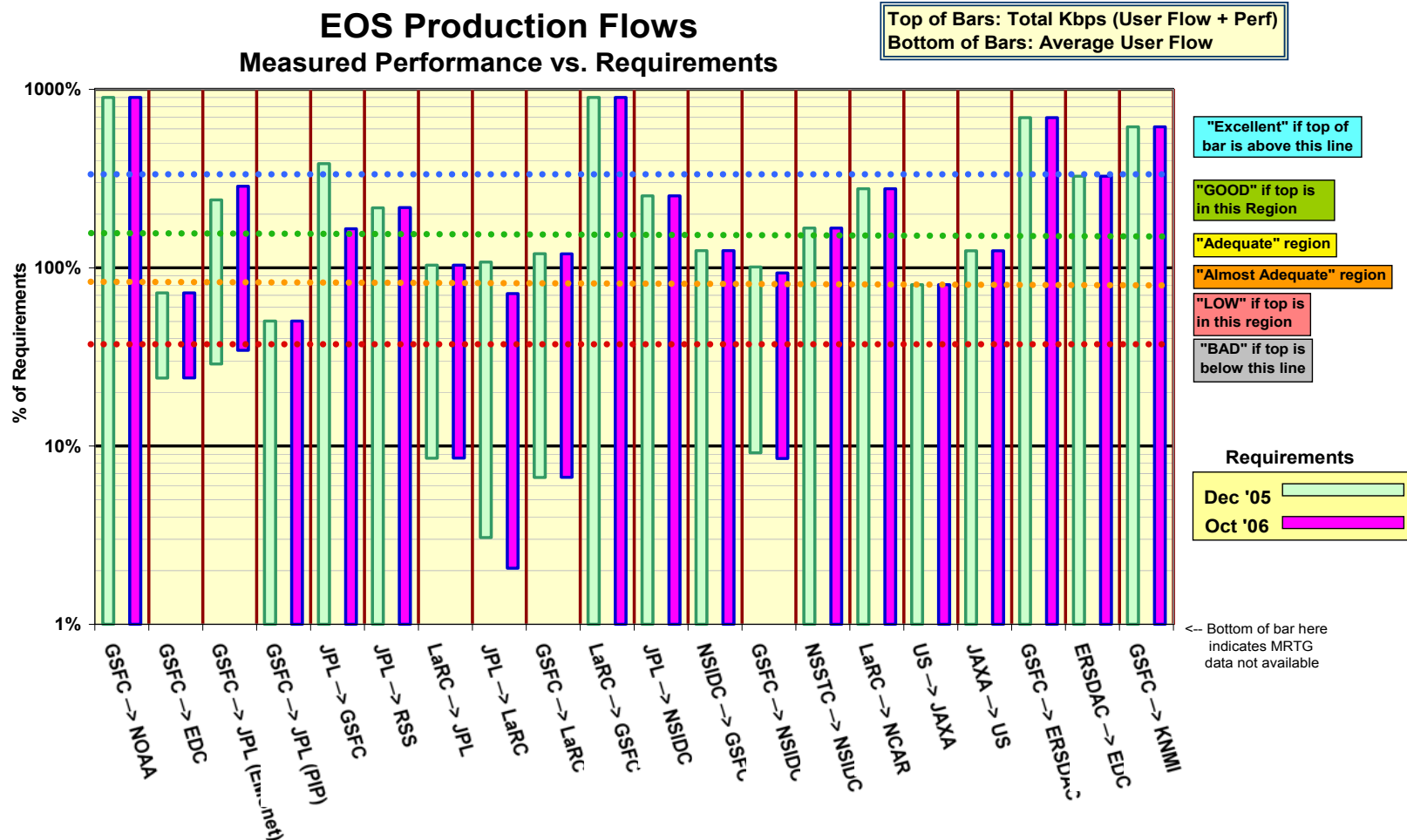- Good
- Adequate
- Almost Adequate
- Low
- Bad
- GPA

The chart above shows the number of sites in each classification since EMSnet testing started in September 1999. Note that these ratings do NOT relate to absolute performance -- they are relative to the EOS requirements.

Network Requirements vs. Measured Performance

December 2005	Team (s)	Requirements (kbps) Current Dec-05	Future Oct-06	Source → Dest Nodes	Avg User Flow kbps	iperf Avg kbps	Total Avg kbps	Integrated kbps	Rating re Current Requirements Dec-05	Prev	Rating re Oct-06
GSFC → ASF	QuikScat, Radarsat	n/a	n/a	GSFC-CSAFS → ASF	1	1330	1331	1330	n/a	n/a	n/a
ASF → JPL	QuikScat, Radarsat	n/a	n/a	ASF → JPL-SEAPAC	76	1315	1391		n/a	n/a	n/a
GSFC → NOAA	QuikScat	189	0	GSFC-CSAFS → NESDIS	n/a	6891	6891		Excellent	E	Excellent
GSFC → EDC	MODIS, LandSat	285361	285361	GDAAC → EDC DAAC	68692	194820	263512	206311	LOW	L	LOW
GSFC → JPL (EMSnet)	ASTER, QuikScat, MLS, etc.	3144	2634	GSFC-CSAFS → JPL-SEAPAC	906	7502	8407	7543	GOOD	G	GOOD
GSFC → JPL (PIP)	AIRS, ISTs	15757	15757	GDAAC → JPL-AIRS	n/a	7888	7888		LOW	L	LOW
JPL → GSFC	AMSR-E, MISR, etc.	3181	7387	JPL-PODAAC → GDAAC	n/a	12181	12181		Excellent	E	GOOD
JPL → RSS	AMSR-E	2488	2488	JPL-PODAAC → RSS	n/a	5395	5395		GOOD	G	GOOD
LaRC → JPL	TES, MISR	39553	39553	LDAAC-PTH → JPL-PTH	3373	40774	44147	40824	Adequate	A	Adequate
JPL → LaRC	TES	35073	52626	JPL-PTH → LARC-PTH	1075	37638	38713	37698	Adequate	A A	LOW
GSFC → LaRC	CERES, MISR, MOPITT	58456	58594	GDAAC → LDAAC	3897	68035	71932	70064	Adequate	A	Adequate
LaRC → GSFC	MODIS, TES	3159	3160	LDAAC → GDAAC	6	50274	50280	50274	Excellent	E	Excellent
JPL → NSIDC	AMSR-E	1342	1342	JPL-PODAAC → NSIDC SIDADS	n/a	3397	3397		GOOD	G	GOOD
NSIDC → GSFC	MODIS, ICESAT, QuikScat	13317	13317	NSIDC DAAC → GDAAC	n/a	16579	16579		Adequate	A	Adequate
GSFC → NSIDC	MODIS, ICESAT, QuikScat	84105	90813	GDAAC → NSIDC-DAAC	7706	83145	90851	84810	Adequate	A	A A
NSSTC → NSIDC	MODIS, ICESAT, QuikScat	7497	7497	NSSTC → NSIDC DAAC	n/a	12487	12487		GOOD	G	GOOD
LaRC → NCAR	HIRDLS	5395	5395	LDAAC → NCAR	n/a	14930	14930		GOOD	G	GOOD
US → JAXA	QuikScat, TRMM, AMSR	1431	1431	GSFC-CSAFS → JAXA	n/a	1147	1147		LOW	A A	LOW
JAXA → US	AMSR-E	1282	1282	JAXA → JPL-SEAPAC	n/a	1594	1594		Adequate	G	Adequate
GSFC → ERSDAC	ASTER	12450	12450	ENPL-PTH → ERSDAC	n/a	86409	86409		Excellent	E	Excellent
ERSDAC → EDC	ASTER	26832	26832	ERSDAC → EDC PTH	n/a	87344	87344		Excellent	E	Excellent
GSFC → KNMI	OMI	3282	3282	GSFC-MAX → OMI-PDR	n/a	20232	20232		Excellent	E	Excellent

Notes: Flow Requirements (from BAH) include TRMM, Terra, Aqua, Aura, ICESAT

*Criteria:			Ratings Summary	Dec-05 Score	Req Prev	Oct-06 Score
Excellent	Total Kbps > Requirement * 3		Excellent	6	6	5
GOOD	1.3 * Requirement <= Total Kbps < Requirement		GOOD	5	6	6
Adequate	Requirement < Total Kbps < Requirement * 1.3		Adequate	6	4	4
Almost Adequate	Requirement / 1.3 < Total Kbps < Requirement		Almost Adequate	0	2	1
LOW	Requirement / 3 < Total Kbps < Requirement / 1.		LOW	3	2	4
BAD	Total Kbps < Requirement / 3		BAD	0	0	0
			Total	20	20	20
			GPA	2.70	2.75	2.58

This graph shows two bars for each source-destination pair. Each bar uses the same actual measured performance, but compares it to the requirements for two different times (October '05 and October. '06). Thus as the requirements increase, the same measured performance will be lower in comparison.

EOS Production Flows
Measured Performance vs. Requirements

Top of Bars: Total Kbps (User Flow + Perf)
Bottom of Bars: Average User Flow

"Excellent" if top of bar is above this line

"GOOD" if top is in this Region

"Adequate" region

"Almost Adequate" region

"LOW" if top is in this region

"BAD" if top is below this line

Requirements

Dec '05

Oct '06

<-- Bottom of bar here indicates MRTG data not available

Interpretation: The bottom of each bar is the average measured MRTG flow to a site. Thus the bottom of each bar indicates the relationship between the requirements and actual flows. Note that the requirements include a 50% contingency factor above what was specified by the projects, so a value of 66% would indicate that the project is flowing as much data as requested. The top of each bar represents the sum of the MRTG user flow plus the iperf measurement – it is this value which is used as the basis of the ratings

1) ASF   Rating: **N/A**

Web Page: http://ensight.eos.nasa.gov/Networks/emsnet/ASF_EMS.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)			User Flow	TOTAL	Integrated
	Best	**Median**	**Worst**	**User Flow**	**TOTAL**	**Integrated**
GSFC-CSAFS → ASF	1.39	1.33	1.04	0.001	1.33	1.33
ASF → NESDIS	1.40	1.40	0.74			
ASF → LASP	1.36	1.36	0.46			
ASF → GSFC-CSAFS	1.40	1.39	0.59			
ASF→ JPL-SEAPAC	1.39	1.32	0.98			

Comments: Thruput test results were stable this month to and from all destinations; the 1.3 to 1.4 mbps inbound and outbound totals are as expected for a single T1 (1.54 mbps) circuit.

Since the requirement from ADEOS has been deleted, the remaining ASF requirements are very low, and are mostly based on estimated ECS interDAAC queries, not production flows. These flow estimates are not considered reliable enough to use as a basis for testing, so the rating is "N/A". ASF requirements to GSFC and LASP will be reincorporated when ASF moves from EMSnet to IOnet in February.

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2) EDC: Rating: Continued Low

Web Page: http://ensight.eos.nasa.gov/Networks/emsnet/EDC.shtml `

Test Results:

Source → Dest	Medians of daily tests (mbps)			User Flow	TOTAL	Integrated
	Best	**Median**	**Worst**	**User Flow**	**TOTAL**	**Integrated**
GSFC-DAAC → EDC LPDAAC	219.9	194.8	83.3	68.7	263.5	206.3
GSFC-PTH → EDC PTH	165.9	136.7	97.4			
ERSDAC→ EDC	88.8	87.3	21.7	(via APAN / Abilene / vBNS+)		
EDC DAAC → GSFC DAAC	125.6	56.6	26.2			
EDC DAAC → GSFC ECHO	76.7	35.4	27.7			
EDC PTH→ GSFC PTH	345.0	320.1	272.7			

Requirements:

Source → Dest	Date	mbps	Rating
GSFC→ EDC	FY '05	285.4	**Low**
ERSDAC→ EDC	FY '05	26.8	**Excellent**

Comments:
The problem from GSFC-PTH to EDC-PTH remains, so the rating is again based on testing between from GDAAC to EDC LPDAAC. The PTH hosts are outside the EDC firewalls, and therefore normally have higher thruput – but that is true this month only for EDC → GSFC flows.

The rating is based on the "Integrated" measurement, and as usual is lower than the sum of the MRTG and iperf. The user flow this month decreased, but still had only a small contribution to the integrated measurement. This 206 mbps value is below 30% under the requirement, so the rating remains "Low". Hopefully when the PTH problem is fixed the rating will improve again.

The median thruput from ERSDAC to EDC-PTH (in support of the ERSDAC to EDC ASTER flow, replacing tapes) is more than 3 times the 26.8 mbps requirement, resulting in an "Excellent" rating.

3) JPL:

3.1) JPL ←→ GSFC

Ratings: JPL → GSFC: Continued **Excellent**
GSFC → JPL: PIP: Continued **Low**
EMSnet: Continued **Good**

Web Pages:

> http://ensight.eos.nasa.gov/Networks/emsnet/JPL_SEAPAC.shtml
> http://ensight.eos.nasa.gov/Networks/emsnet/JPL_PODAAC.shtml
> http://ensight.eos.nasa.gov/Missions/aqua/JPL_AIRS.shtml

Test Results:

Source → Dest	NET	Medians of daily tests (mbps)			User Flow	TOTAL	Integrated
		Best	Median	Worst			
GSFC-CSAFS → JPL-SEAPAC	EMS	7.7	7.5	3.0	0.9	8.4	7.5
GSFC-PTH → JPL-PODAAC	PIP	6.2	6.0	4.2			
JPL-PODAAC→ GSFC DAAC	PIP	12.3	12.2	4.9			
GSFC-DAAC → JPL-AIRS	PIP	13.9	7.9	2.3			
GSFC-PTH → JPL-AIRS	PIP	8.7	3.3	1.4			
GSFC-CNE → JPL-AIRS	SIP	19.7	1.9	0.9			
GSFC-CNE → JPL-MISR	SIP	22.7	20.1	14.5			

Requirements:

Source → Dest	Date	Mbps	Rating
GSFC → JPL via EMSnet	Nov '05	3.14	**Good**
GSFC → JPL via PIP	Nov '05	15.76	**Low**
JPL → GSFC combined	Nov '05	3.18	**Excellent**

Comments:

GSFC → JPL: Most GSFC-JPL flows moved from EMSnet to NISN PIP on 2 December (But the GSFC to JPL SEAPAC and ASF destinations remained on EMSnet) the requirements are therefore correspondingly divided. However, since most traceroutes are blocked, it is not clear that the flows are actually taking their intended routes. .

> **EMSnet:** The performance on this circuit has been stable since the NISN 6 to 8 mbps PVC change in late March; The daily worst improved due to some flows being moved off this circuit. The rating remains "Good".

> **PIP:** The PIP flows include QA data from GDAAC to JPL-AIRS, ISTs for several missions (but the JAXA AMSR-E ISTs flow to JPL via EMSnet), and science user flow estimates, totaling 15.76 mbps. The thruput via PIP appears bimodal, usually either about 1.5-2 mbps or 10-16 mbps – quite similar from the GDAAC and GSFC-PTH nodes. It had been much more stable from GSFC CNE (via SIP, usually 18-20 mbps) until late October, when the thruput via SIP became as noisy as PIP.   This extreme noisiness causes the median to be well below the requirement, resulting in a Continued "Low" rating.

> Note: SIP performance was much better from the same source at GSFC to JPL-MISR – via the same route except for the last LAN hop. This suggests problems at the AIRS destination node.

JPL → GSFC: The requirement from JPL to GSFC includes flows from JAXA and ASF which go via JPL, and includes GSFC and NOAA destinations. This requirement dropped substantially with the removal of ADEOS. Since the combined 12.5 mbps thruput is more than 3 times the 3.18 mbps requirement, the rating remains "Excellent". The MLS requirements increase in Jan 2006; the rating would drop to "Good:

3.2) JPL ⟵⟶ LaRC

Ratings: LaRC → JPL: Continued **Adequate**
JPL→ LaRC: ⬆ Almost Adequate→**Adequate**

Web Pages:
http://ensight.eos.nasa.gov/Networks/emsnet/JPL_TES.shtml
http://ensight.eos.nasa.gov/Missions/terra/JPL_MISR.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)			User Flow	TOTAL	Integrated
	Best	Median	Worst			
LaRC PTH → JPL-PTH	41.0	40.8	27.8	3.4	44.1	40.8
LaRC DAAC → JPL-TES	40.8	36.6	11.1			
LaRC DAAC → JPL-MISR	41.5	40.1	15.7			
JPL-PTH → LaRC PTH	37.7	37.6	37.4	1.1	38.7	37.7
JPL-TES → LaRC PTH	35.6	34.4	28.2			

Requirements:

Source → Dest	Date	Mbps	Rating
LaRC DAAC → JPL-TES	Nov '05	29.8	**Adequate**
LaRC DAAC → JPL-MISR	Nov '05	18.5	**Good**
LaRC DAAC → JPL-Combined	Nov '05	39.5	**Adequate**
JPL → LaRC	Nov '05	35.1	**Adequate**

Comments:

LDAAC→ JPL: Performance has been stable since this flow was switched to NISN PIP on 10 Feb '05; MRTG data became unavailable at that time -- the passive "flows" data is now being used instead. The LaRC-PTH to JPL-PTH testing also was disabled by this transition, but has now been re-enabled since the JPL-PTH node moved to PIP in December. The "integrated" thruput is just above the requirement; the rating remains "Adequate".

JPL → LDAAC: This requirement was identified in version 1.4 of the EOS Networks Handbook, and is for TES products produced at the TES SIPS at JPL, being returned to LaRC for archiving. Testing of this capability was switched this month to use iperf from JPL-PTH to LARC PTH, now that these nodes are again on the same network (PIP). The measured thruput improved this month to just over the requirement, improving the rating to "Adequate".

3.3) ERSDAC → JPL ASTER IST

Rating: n/a

Test Results:

Source → Dest	Medians of daily tests (mbps)		
	Best	Median	Worst
ERSDAC → JPL-ASTER-IST	85.6	76.5	18.7

Comments:

ERSDAC → JPL-ASTER-IST: This test was initiated in March '05, via APAN replacing the EBnet circuit. The typical 76 mbps must be well in excess of the requirements (IST requirements are generally 311 kbps).

4) NSIDC:

Ratings: GSFC → NSIDC: Continued **Adequate**
NSIDC → GSFC: Continued **Adequate**

Web Pages: http://ensight.eos.nasa.gov/Networks/emsnet/NSIDC_EMS.shtml
http://ensight.eos.nasa.gov/Missions/aqua/NSIDC_u.shtml

GSFC ←→ NSIDC Test Results:

Source → Dest	Medians of daily tests (mbps)			User Flow	TOTAL	Integrated
	Best	Median	Worst			
GSFC-DAAC→ NSIDC-DAAC	90.5	83.1	35.0	7.7	90.8	84.8
GSFC-PTH → NSIDC-DAAC	91.2	85.1	38.4			
NSIDC DAAC → GSFC-DAAC	16.9	16.6	10.9			

Requirements:

Source → Dest	Date	Mbps	Rating
GSFC → NSIDC	Oct '05	84.1	Adequate
NSIDC → GSFC	Dec '04	13.3	Adequate

Comments:

GSFC → NSIDC: This flow was switched from EMSnet to NISN PIP in February '05 -- as a result of this switch, the MRTG data became unavailable -- the passive "flows" data is now being used instead. The rating is based on testing from GDAAC to the NSIDC DAAC. The iperf and integrated thruput values were stable this month. The requirement, however, varies from month to month, based on planned ICESAT reprocessing. This month the reprocessing **IS** included. So the thruput remains [barely] above the requirement, so the rating remains "Adequate"

NSIDC → GSFC: Performance from NSIDC to GSFC was stable this month, and the median remains slightly below 30% above the requirement, so the rating remains "Adequate".

Other Testing:

Source → Dest	Medians of daily tests (mbps)			Requirement	Rating
	Best	Median	Worst		
JPL → NSIDC-SIDADS	4.0	3.4	1.7	1.34	Good
GSFC-ISIPS → NSIDC (iperf)	90.2	81.4	33.2		
GSFC-ISIPS → NSIDC (ftp)	24.0	23.9	16.4		
NSIDC → GSFC-ISIPS (iperf)	16.2	15.7	13.9		
NSIDC → GSFC-ECHO	25.1	22.3	18.0		
NSSTC → NSIDC DAAC	12.7	12.5	0.3	7.5	Good
ASF → LASP	1.36	1.36	0.46	0.73	Good

Comments:

JPL → NSIDC-SIDADS: This flow switched from EMSnet to PIP in Feb '05, and thruput dropped from 6.1 mbps previously. Thruput remains below 3 x the requirement, so the rating remains "Good".

GSFC-ISIPS ← → NSIDC: Performance from ISIPS to NSIDC was fixed in Feb '05, after having problems since July '04. Performance is at nominal levels for the circuit capacity. Testing from NSIDC to ISIPS is stable and gets thruput similar to NSIDC to GDAAC.

NSSTC → NSIDC: NSSTC (Huntsville, AL) sends AMSR-E data to NSIDC. Median thruput is more than 30 % over the requirement, so is rated "Good"

ASF → LASP: Began testing from ASF to LASP node in October '05 – performance is limited by ASF T1 circuit, rating "Good".

5) GSFC ←→ LaRC:

Ratings: LDAAC → GDAAC: Continued **Excellent**
GSFC → LARC: Continued **Adequate**

Web Pages: http://ensight.eos.nasa.gov/Networks/emsnet/LARC.shtml
http://ensight.eos.nasa.gov/Missions/sage/SAGE_MOC.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)			User Flow	TOTAL	Integrated
	Best	Median	Worst			
GDAAC → LDAAC	77.7	68.0	24.3	3.9	71.9	70.1
GSFC-NISN → LaTIS	79.1	65.7	9.7			
GSFC-PTH → LaRC-PTH	78.5	68.9	24.8			
GSFC-SAFS → LaRC-SAGE III MOC	5.4	5.0	1.5			
LDAAC → GDAAC	52.3	50.3	25.8	0.006	50.3	50.3
LDAAC → GSFC-ECHO	42.5	38.4	24.7			

Requirements:

Source → Dest	Date	Mbps	Rating
GSFC → LARC (Combined)	FY '06	58.5	**Adequate**
GDAAC → LaRC ECS	FY '06	17.8	**Excellent**
GSFC-SAFS → LaRC-SAGE III MOC	FY '06	0.26	**Excellent**
GSFC → LATIS	FY '06	40.7	**Good**
LDAAC → GDAAC	FY '06	3.2	**Excellent**

Comments:

GSFC → LaRC: The combined 58.5 mbps requirement had been split between LDAAC and LaTIS when the flows were on separate circuits, but is now treated as a single requirement as they have been both on PIP since Feb '05. So the rating is now based on the GDAAC to LaRC ECS DAAC thruput, compared to the combined requirement. MRTG and LaTIS user flow data are also no longer available (but the ECS user flow data is used for the "User Flow" above).

So the GSFC→ LaRC ECS DAAC thruput is now above the combined requirement, but by less than 30%, so the combined rating remains "Adequate".

GSFC-SAFS → LaRC-SAGE III MOC flows were moved to this section this month from the SCF report. Although the thruput is much lower than the other GSFC-LaRC flows, it it more than 3 times the modest requirement. Resulting in an "Excellent" rating"

LaRC → GSFC: Performance from LDAAC → GDAAC remained stable with the switch to PIP in Feb '05. The thruput remains more than 3 x the 3.2 mbps requirement (with the backhaul flows removed), so the rating continues as "Excellent".

This month testing from LDAAC to GSFC-ECHO was added. The thruput is similar to but a bit lower than LDAAC to GDAAC.

6) NOAA NESDIS: Rating: `Excellent`

Web Page: http://ensight.eos.nasa.gov/Networks/emsnet/NOAA_NESDIS.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)		
	Best	**Median**	**Worst**
GSFC-SAFS → NOAA	7.1	6.9	4.4
JPL → NOAA	4.8	4.8	4.6
ASF → NOAA	1.4	1.4	0.7
JAXA → NOAA	1.9	1.9	1.7

Requirements:

Source → Dest	FY	Mbps	Rating
GSFC-CSAFS → NESDIS	'05	0.19	`Excellent`

Comments: The NOAA EMSnet test host was replaced in October '05. All flows are now via the MAX connection. The dominant flow to NOAA is Quikscat data, from GSFC CSAFS. Thruput was much higher than the requirement, rating "Excellent". Testing to this new node from JAXA started this month – results are consistent with circuit limitations.

7) US ←→ JAXA: Ratings: JAXA → US: ↓ Good → **Adequate**
US → JAXA**:** ↓ Almost Adequate → **Low**

Web Pages   http://ensight.eos.nasa.gov/Networks/emsnet/JAXA_EOC.shtml
http://ensight.eos.nasa.gov/Networks/emsnet/JPL_SEAPAC.shtml
http://ensight.eos.nasa.gov/Networks/emsnet/GSFC_SAFS.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)		
	Best	Median	Worst
GSFC-CSAFS → JAXA-EOC	1.36	1.15	0.75
JPL → JAXA-EOC	1.67	1.39	0.48
ASF → JAXA-EOC	1.07	0.77	0.39
JAXA-EOC → JPL-SEAPAC	1.61	1.59	0.98
JAXA-EOC → GSFC-DAAC	1.49	1.42	0.50

Requirements

Source → Dest	Date	mbps	Rating
GSFC → JAXA	FY '05, '06	1.43	**Low**
JAXA → US	FY '04 - '06	1.28	**Adequate**

Comments:

The JAXA circuit was moved to PIP on December 2 – performance reductions were observed. Also, MRTG data was no longer available.

US → JAXA: Performance from GSFC dropped this month (was 1.27 mbps vii EMSnet last month). Performance from JPL held up well, since it was mostly unaffected. From ASF the path was substantially lengthened – it went from ASF to JPL to GSFC via EMSnet, then back to JPL via PIP, then to the JAXA tail circuit. This increased the RTT from about 180 to 350 ms, and decreased the performance from 1.1 mbps last month.

JAXA → US: Performance remained consistent with the ATM PVC. The requirement was increased in Version 1.4 of the EOS Networks Handbook. This month testing from JAXA to JPL was stable; but without adding the MRTG, the thruput was no longer 30% over the requirement, dropping the rating back to "Adequate".

SInet Testing:

It is planned to remove the NASA – JAXA dedicated circuit above, by September 2006. After that, all the above data will be transferred via SInet or APAN. Accordingly, the following tests are run via SInet:

Source → Dest	Medians of daily tests (mbps)			Requirement	Rating
	Best	Median	Worst		
GSFC → JAXA	2.49	2.20	1.73	1.43	**Good**
JAXA → GSFC	8.81	8.77	8.23	1.28	**Excellent**

Thruput from GSFC to JAXA is considerably better via this path than the dedicated ATM circuit. Beginning July 1 '05, JAXA upgraded their infrastructure, and thruput was 20-30 mbps from GSFC to JAXA, and 10 mbps from JAXA to GSFC. But on 13 September, thruput abruptly dropped, accompanied by significant packet loss. This problem cleared up for JAXA to US in late November, improving the thruput from a median of 1.1 mbps last month. (Note: It cleared up for US to JAXA in January)

So this now path seems superior to the ATM circuit (also cheaper!).

8) ERSDAC ←→ US: Rating: Continued Excellent

Web Page :http://ensight.eos.nasa.gov/Networks/emsnet/ERSDAC.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)		
	Best	Median	Worst
GDAAC → ERSDAC	21.4	16.8	8.5
GSFC ENPL (Fast Ethernet) → ERSDAC	89.3	86.4	24.8

Requirements:

Source → Dest	FY	Mbps	Rating
GSFC → ERSDAC	'03 - '05	12.5	Excellent

Comments: Dataflow from GDAAC to ERSDAC was switched to APAN in February '05, and the performance above is via that route. MRTG and user flow data are no longer available due to this change.

The thruput from GDAAC is apparently limited by packet loss at the GigE to FastE switch at Tokyo-XP. The GigE GDAAC source does not see any bottlenecks until this switch (The Abilene and APAN backbones are 10 Gbps), and thus exceeds capacity of the switch's FastE output circuit. But the FastE connected GSFC-ENPL node is limited to 100 mbps by its own interface, so does not suffer performance degrading packet loss – its performance is much higher. Note: EDOS is also FastE connected, and gets the higher performance levels. It is planned to begin testing from EDOS to ERSDAC soon.

The requirement now includes the level 0 flows which used to be sent by tapes. The thruput is still more than 3 x this increased requirement, so the rating remains "Excellent".

Other Testing:

Source → Dest	Medians of daily tests (mbps)		
	Best	Median	Worst
ERSDAC → JPL-ASTER IST	85.6	76.5	18.7
ERSDAC → EDC	88.8	87.3	21.7

Requirements:

Source → Dest	Date	mbps	Rating
ERSDAC → EDC	FY '05	26.8	Excellent

Comments:

ERSDAC → EDC: The results from this test (in support of the ERSDAC to EDC ASTER flow, replacing tapes) were stable this month. Thruput improved to these present values in April '05 after the Abilene to NGIX-E connection was repaired. The median thruput is more than 3 x the requirement, so the rating is "Excellent"

ERSDAC → JPL-ASTER-IST: This test was initiated in March, via APAN replacing the EBnet circuit. The results are much higher than previously via the 1 mbps ATM circuit, and should be considered "Excellent" (no requirement is specified at this time – but other IST requirements are 311 kbps)

9) SIPS Sites:

Web Pages   http://ensight.eos.nasa.gov/Missions/terra/NCAR.shtml
http://ensight.eos.nasa.gov/Missions/aqua/RSS.shtml
http://ensight.eos.nasa.gov/Missions/aura/KNMI_OMIPDR.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)			Requirement	Rating
	Best	Median	Worst		
LaRC → NCAR	21.7	14.9	7.1	5.4	Good
GSFC → NCAR	93.1	92.9	91.8	5.1	Excellent
JPL → RSS	5.6	5.4	2.6	2.4	Good
GSFC → KNMI-OMIPDR	20.3	20.2	17.5	3.3	Excellent

Comments: These sites were previously reported in the QA/SCF report. But have been moved to this report since as SIPS, they are part of the EOS data production process. Note that they are not connected by EMSnet.

NCAR: NCAR (Boulder, CO) is a SIPS for MOPITT (Terra, from LaRC), and has MOPITT and HIRDLS QA (Aura, from GSFC) requirements. Thruput from LaRC (via NISN to MAX to Abilene) is just below 3 x the requirement, so the rating is "Good". From GSFC median thruput is extremely steady at well over 3 x the requirement, so that rating is "Excellent".

RSS: RSS (Santa Rosa, CA) is a SIPS for AMSR-E, receiving data from JPL, and sending its results to NSSTC (Huntsville, AL). The NISN dedicated circuit from JPL to RSS was upgraded in August '05 from 2 T1s (3 mbps) to 4 T1s (6 mbps) to accommodate the larger RSS to GHCC flow. Thruput improved to the above values at that time – it is now more that 30% above the requirement, the rating remains "Good".

Note that with the present configuration (passive servers at both RSS and NSSTC), the RSS to NSSTC performance cannot be tested.

KNMI: KNMI (DeBilt, Netherlands) is a SIPS and QA site for OMI (Aura). The route from GSFC is via MAX to Abilene, peering in NY with Surfnet's 10Gbps circuit to Amsterdam. Thruput to the OMIPDR backup server at KNMI is limited only by a Fast Ethernet connection at KNMI, and gets over 80 mbps steady! The results above are to the OMI PDR primary server, protected by a firewall, and are quite a bit lower. Thruput is still well above 3 x the requirement, rating "Excellent".